In this course, students will study the broad characteristics of functions and their behaviors and solve problems that require the formulation of linear, quadratic, polynomial, exponential, logarithmic equations or a system of equations or inequalities. Probability, experimental design and implementation, and analysis of data will be incorporated into the study of functions, and data will be generated by practical applications derived from real life scenarios.

This course is built to Virginia's standards for Algebra, Functions and Data Analysis.

Length: Two semesters

UNIT 1: FUNCTIONS AND RELATIONS

LESSON 1: WHAT IS A FUNCTION?

Study: Relating to Functions
Learn about functions, their graphs, and some special functions.
Duration: 0 hrs 35 mins

Checkup: Practice Problems
Complete a set of practice problems on functions.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: What Is a Function?
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: GRAPHING FUNCTIONS

Study: Graphing Functions
Learn the vertical line and horizontal line tests for evaluating a function. Evaluate a function for given values and explore special functions.
Duration: 0 hrs 35 mins

Checkup: Practice Problems
Complete a set of practice problems on graphing functions.
Duration: 0 hrs 25 mins

Quiz: Graphing Functions
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 3: LINEAR FUNCTIONS

Study: Linear Functions
Learn about slope and the three main forms of linear functions.
Duration: 0 hrs 35 mins

Checkup: Practice Problems
Complete a set of practice problems on linear functions.
Duration: 0 hrs 25 mins

Quiz: Linear Functions
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 4: LINEAR EQUATIONS AND INEQUALITIES

Study: Linear Equations and Inequalities
Learn how to solve linear equations and inequalities.
Duration: 0 hrs 35 mins

Checkup: Practice Problems
Complete a set of practice problems on linear equations and inequalities.
Duration: 0 hrs 25 mins

Quiz: Linear Equations and Inequalities
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Journal: The Summer Job
Work through a real-world problem involving linear equations and inequalities.
Duration: 0 hrs 30 mins Scoring: 20 points

LESSON 5: LINEAR SYSTEMS

Study: Linear Systems
Find the point of intersection of linear systems using algebra, graphing, and matrices.
Duration: 0 hrs 35 mins

Study: Connection to Business: Linear Programming
Learn how businesses solve problems using linear programming.
Duration: 0 hrs 35 mins

Checkup: Practice Problems
Complete a set of practice problems on linear systems.
Duration: 0 hrs 25 mins

Quiz: Linear Systems
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Modeling: Best Ticket Deal
Model ticket pricing using an equation.
Duration: 0 hrs 30 mins Scoring: 20 points

LESSON 6: FUNCTIONS AND RELATIONS WRAP-UP

Checkup: Practice Problems
Check your understanding of the unit.
Duration: 0 hrs 25 mins Scoring: 0 points

Review: Functions and Relations
Get ready for the unit test by reviewing important ideas and skills.
Duration: 0 hrs 20 mins Scoring: 0 points

Test (CS): Functions and Relations
Take a computer-scored test to check what you have learned in this unit.
Duration: 0 hrs 40 mins Scoring: 50 points

Test (TS): Functions and Relations
Take a teacher-scored test to check what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 2: QUADRATIC FUNCTIONS

LESSON 1: FACTORING $x^2 + bx + c$

Study: Factoring $x^2 + bx + c$
Learn about factoring quadratic trinomials with leading coefficients of 1; rules for finding the constant term and

coefficient of the *x*-term; using a table to factor trinomials; and diagramming signs while factoring trinomials.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Binomial Factors of Trinomials

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Factoring Trinomials

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: FACTORING $AX^2 + BX + C$

Study: Factoring $ax^2 + bx + c$

Learn about factoring trinomials with leading coefficients other than 1; factoring out a leading coefficient of -1; how values of factors relate to values of a trinomial; finding factor pairs of leading coefficients and constant terms; and finding signs in factors of trinomials with leading coefficients other than 1.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Factoring Trinomials (Basic)

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Factoring Trinomials (Advanced)

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 3: SPECIAL CASES

Study: Special Cases

Identify and factor differences of squares and perfect-square trinomials.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Factoring a Difference of Squares

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Factoring Perfect Square Trinomials

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Sum or Difference of Two Cubes

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Journal: Breakdown Ahead

Explain your understanding of factoring to help a peer solve a problem.

Duration: 0 hrs 30 mins Scoring: 20 points

LESSON 4: SOLVING QUADRATIC EQUATIONS

Study: Solving Quadratic Equations

Learn about solving quadratic equations using factoring and the zero product rule, manipulating a quadratic equation into standard form, and solving quadratic equations with perfect-square trinomials.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Factoring with the Zero Product Rule

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Converting Quadratics to Standard Form

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Quadratics with Perfect Square Trinomials

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 5: COMPLETING THE SQUARE

Study: Completing the Square

Learn the "completing the square" method of solving quadratic equations. Practice adding a strategic number to both sides of an equation to make one side a perfect-square trinomial. Then solve the equation by taking the square root of both sides and simplifying. Use algebra tiles to determine the number needed to complete the square.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Completing the Square

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Completing the Square (Advanced)

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 6: THE QUADRATIC FORMULA

Study: The Quadratic Formula

Learn about types of equations that can be solved with the quadratic formula; complex numbers; discriminants; and finding roots (including complex roots) using the quadratic formula.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Complex Numbers and Discriminants

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: The Quadratic Formula

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 7: GRAPHS OF QUADRATIC FUNCTIONS

Study: Graphs of Quadratic Functions

Relate factors of a quadratic function to the graph of a parabola and its corresponding *x*-intercepts. Locate the vertex of a quadratic function graphically and algebraically. Use the discriminant of the quadratic formula to identify the number and types of solutions to a given quadratic equation, as well as to visualize its corresponding graph.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Graphs of Quadratic Functions

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Working with the Discriminant

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Modeling: Pumpkin Launch

Model a graph with real world data.

Duration: 0 hrs 30 mins Scoring: 20 points

LESSON 8: IMAGINARY NUMBERS

Study: Imaginary Numbers

Learn about imaginary and complex numbers, perform basic arithmetic operations on complex numbers, and solve equations with imaginary and complex numbers.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Imaginary Numbers

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Operations on Complex Numbers

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Quadratics With Complex Solutions

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 9: NONLINEAR SYSTEMS OF EQUATIONS

Study: Nonlinear Systems of Equations

Learn about solution sets for nonlinear systems of equations, solving nonlinear systems of equations using the substitution method, choosing which variable to isolate, substituting a squared variable, and determining the number of solutions. Explore a human-cannonball case study.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Nonlinear Systems of Equations

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 10: NONLINEAR SYSTEMS OF INEQUALITIES

Study: Nonlinear Systems of Inequalities
Learn about solution sets for and graphs of nonlinear inequalities; boundaries of parabolas; three steps to graphing nonlinear inequalities; and nonlinear systems of inequalities.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Nonlinear Inequalities
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 11: QUADRATIC FUNCTIONS WRAP-UP

Checkup: Practice Problems
Submit your work for a set of 20 practice problems.
Duration: 0 hrs 25 mins Scoring: 0 points

Review: Quadratic Functions
Get ready for the unit test by reviewing important ideas and skills.
Duration: 0 hrs 20 mins Scoring: 0 points

Test (CS): Quadratic Functions
Take a computer-scored test to check what you have learned in this unit.
Duration: 0 hrs 40 mins Scoring: 50 points

Test (TS): Quadratic Functions
Take a teacher-scored test to check what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 3: POLYNOMIAL FUNCTIONS

LESSON 1: POLYNOMIAL BASICS

Study: Polynomial Basics
Learn that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Polynomial Basics
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Modeling: Multiplying Polynomials
Use tiles to model the multiplication of binomials and solve a real-world problem.
Duration: 0 hrs 30 mins Scoring: 20 points

LESSON 2: POLYNOMIAL FUNCTIONS

Study: Polynomial Functions
Learn to identify, classify, evaluate, and graph polynomial functions and expressions. Practice writing polynomials in descending order, as well as using the degree of a given polynomial function to predict the general shape of its graph.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Polynomial Functions

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 3: SYNTHETIC DIVISION

Study: Synthetic Division

Learn two methods for dividing polynomials — long division and synthetic division. Use synthetic division to expedite the process of finding factors and roots of polynomial expressions.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Synthetic Division

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 4: FACTORING POLYNOMIALS COMPLETELY

Study: Factoring Polynomials Completely

Learn about the remainder-factor theorem, rational-roots theorem, complex-conjugate theorem, and conjugate-radical theorem. Learn to use synthetic division to factor higher-order polynomials.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Remainder and Factor Theorems

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Factoring Polynomials Completely

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 5: SOLVING POLYNOMIAL EQUATIONS

Study: Solving Polynomial Equations

Find all solutions to polynomial equations.

Duration: 0 hrs 35 mins

Checkup: Practice Problems

Complete a set of practice problems on solving polynomial equations.

Duration: 0 hrs 25 mins

Quiz: Solving Polynomial Equations

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 6: GRAPHING POLYNOMIAL FUNCTIONS

Study: Graphs of Polynomial Functions

Learn to graph polynomial functions, identify zeros and write a polynomial function from its zeros.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Graphs of Polynomial Functions
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

Journal: Designing a Mountain Landscape
Discuss with a peer the process for using binomials to design a curved mountain landscape.
Duration: 0 hrs 30 mins Scoring: 20 points

LESSON 7: POLYNOMIAL IDENTITIES

Study: Polynomial Identities
Prove polynomial identities and use them to describe numerical relationships.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Polynomial Identities
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 8: BINOMIAL THEOREM

Study: Binomial Theorem
Learn and apply the binomial theorem.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Binomial Theorem
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 9: TRANSFORMATIONS OF POLYNOMIAL FUNCTIONS

Study: Transformations of Polynomial Functions
Transform polynomial functions.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Transformations of Polynomial Functions
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 10: POLYNOMIAL FUNCTIONS WRAP-UP

Checkup: Practice Problems
Check your understanding of the unit.
Duration: 0 hrs 25 mins Scoring: 0 points

Review: Polynomial Functions
Get ready for the unit test by reviewing important ideas and skills.
Duration: 0 hrs 20 mins Scoring: 0 points

Test (CS): Polynomial Functions
Take a computer-scored test to check what you have learned in this unit.
Duration: 0 hrs 40 mins Scoring: 50 points

Test (TS): Polynomial Functions
Take a teacher-scored test to check what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 4: RATIONAL EXPRESSIONS AND FUNCTIONS

LESSON 1: PROPORTIONS

Study: Proportions
Learn the definition of a rational expression and about using proportional reasoning to solve problems. Explore real-world examples of proportional reasoning.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Proportions
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: RATIONAL EXPRESSIONS

Study: Rational Expressions
Learn about finding the value of a rational expression and about undefined rational expressions.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Rational Expressions
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 3: SIMPLIFYING RATIONAL EXPRESSIONS

Study: Simplifying Rational Expressions
Practice finding and dividing out common factors in numerators and denominators of rational expressions. Explore the crucial difference between common factors and terms.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Simplifying Rational Expressions
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 4: MULTIPLYING AND DIVIDING RATIONAL EXPRESSIONS

Study: Multiplying and Dividing Rational Expressions
Review multiplying and dividing numerical fractions, multiplying rational expressions, dividing rational expressions, and simplifying the results.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Multiplying Rational Expressions

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Dividing Rational Expressions

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 5: ADDING AND SUBTRACTING RATIONAL EXPRESSIONS

Study: Adding and Subtracting Rational Expressions

Review adding and subtracting numerical fractions, adding and subtracting rational expressions with like denominators, finding least common denominators, finding multiples of rational expressions, and adding and subtracting rational expressions with unlike denominators.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Adding and Subtracting Rational Expressions

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 6: INVERSE VARIATION

Study: Inverse Variation

Review direct variation and how increasing input leads to proportionally increasing output. Review inverse variation and how increasing input leads to proportionally decreasing output. Review finding the constant of variation.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Inverse Variation

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Modeling: Finding the Constant in Inverse Variation

Create a graph using a table of inverse variation data, and determine a constant value to create an approximate functional model.

Duration: 0 hrs 30 mins Scoring: 20 points

LESSON 7: SOLVING RATIONAL FUNCTIONS

Study: Solving Rational Functions

Learn the definition of a rational function and how to find the domain of a given function. Explore the horizontal and vertical asymptotes of rational functions.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Rational Functions

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 8: VERTICAL ASYMPTOTES

Study: Vertical Asymptotes
Learn about graphs of rational functions, about finding vertical asymptotes, and about graphing rational functions with more than one vertical asymptote.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Finding Vertical Asymptotes
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: More Than One Vertical Asymptote
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

Journal: Rural Wireless Internet
Formulate and evaluate an approach to increasing rural internet access, and discuss conclusions with a peer.
Duration: 0 hrs 30 mins Scoring: 20 points

LESSON 9: GRAPHING RATIONAL FUNCTIONS

Study: Graphing Rational Functions
Learn about graphing rational functions with variables in the numerator, constructing a sign chart, and picking test numbers. Learn about rational functions with a singular point.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Graphing Rational Functions
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 10: RATIONAL EXPRESSIONS AND FUNCTIONS WRAP-UP

Checkup: Practice Problems
Submit your work for a set of 20 practice problems.
Duration: 0 hrs 25 mins Scoring: 0 points

Review: Rational Expressions and Functions
Get ready for the unit test by reviewing important ideas and skills.
Duration: 0 hrs 20 mins Scoring: 0 points

Test (CS): Rational Expressions and Functions
Take a computer-scored test to check what you have learned in this unit.
Duration: 0 hrs 40 mins Scoring: 50 points

Test (TS): Rational Expressions and Functions
Take a teacher-scored test to check what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 5: EXPONENTIAL AND LOGARITHMIC FUNCTIONS

LESSON 1: EXPONENTIAL FUNCTIONS

Study: Exponential Functions
Define the standard form of an exponential function and explore a variety of its applications, such as exponential growth and decay (in the forms of doubling time and half-life), as well as compound interest. Compare compound interest to continuously compounded interest using the irrational number *e*.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Evaluating Exponential Functions
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Calculating Exponential Growth
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: EXAMPLES AND APPLICATIONS OF EXPONENTIAL FUNCTIONS

Study: Examples and Applications of Exponential Functions
Explore case studies in exponential growth and decay and logarithmic growth.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

LESSON 3: GRAPHS OF EXPONENTIAL FUNCTIONS

Study: Graphs of Exponential Functions
Learn about the shape of graphs of exponential functions with various bases and about finding the domain and range of exponential functions.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Graphs of Exponential Functions
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

Journal: Exponential vs. Quadratic
Interpret a table of cell growth data, and discuss with a peer.
Duration: 0 hrs 30 mins Scoring: 20 points

LESSON 4: LOGARITHMIC FUNCTIONS

Study: Logarithmic Functions
Learn about undoing exponential functions, graphing the inverse of an exponential or logarithmic function, and using the common and natural logarithm.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Logarithmic Functions
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 5: GRAPHS OF LOGARITHMIC FUNCTIONS

Study: Graphs of Logarithmic Functions
Learn about the shape of graphs of logarithmic functions with various bases and about the domain and range of logarithmic functions.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Graphs of Logarithmic Functions

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 6: PROPERTIES OF EXPONENTS AND LOGARITHMS

Study: Properties of Exponents and Logarithms

Learn about product, quotient, and power laws of exponents; rewriting the log of a product as the sum of two logs; rewriting the log of a quotient as the difference of two logs; simplifying the log of a power; and using the change-of-base formula to rewrite logarithms.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Equivalent Exponential Expressions

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Equivalent Logarithmic Expressions

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Evaluating Logarithms

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 7: SOLVING EXPONENTIAL EQUATIONS

Study: Solving Exponential Equations

Learn about using ordinary algebra and the properties of logarithms to solve exponential equations. Answer questions inspired by the classic chessboard problem.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Solving Exponential Equations

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 8: SOLVING LOGARITHMIC EQUATIONS

Study: Solving Logarithmic Equations

Learn about using ordinary algebra and the definition of a logarithm to solve logarithmic equations. Answer questions about energy in earthquakes.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Solving Logarithmic Equations

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 9: APPLICATIONS OF LOGARITHMS

Study: Applications of Logarithms
Solve application problems involving exponential and logarithmic expressions.
Duration: 0 hrs 35 mins

Checkup: Practice Problems
Complete a set of practice problems on applications of logarithms.
Duration: 0 hrs 25 mins

Quiz: Applications of Logarithms
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 10: COMPARING AND ANALYZING FUNCTION TYPES

Study: Comparing and Analyzing Function Types
Apply transformations to a variety of function families.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Comparing and Analyzing Function Types
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 11: EXPONENTIAL AND LOGARITHMIC FUNCTIONS WRAP-UP

Checkup: Practice Problems
Submit your work for a set of 20 practice problems.
Duration: 0 hrs 25 mins

Review: Exponential and Logarithmic Functions
Get ready for the unit test by reviewing important ideas and skills.
Duration: 0 hrs 20 mins Scoring: 0 points

Test (CS): Exponential and Logarithmic Functions
Take a computer-scored test to check what you have learned in this unit.
Duration: 0 hrs 40 mins Scoring: 48 points

Test (TS): Exponential and Logarithmic Functions
Take a teacher-scored test to check what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 6: SEMESTER 1 EXAM

LESSON 1: SEMESTER 1 EXAM

Review: Semester 1 Exam
Get ready for the semester exam by reviewing important ideas and skills.
Duration: 0 hrs 20 mins Scoring: 0 points

Exam: Semester 1 Exam
Take a computer-scored exam to demonstrate your mastery of concepts and skills covered in Semester 1.
Duration: 0 hrs 50 mins Scoring: 180 points

UNIT 7: STATISTICAL ANALYSIS

LESSON 1: REVIEW OF GRAPHICAL ANALYSIS OF DATA

Study: Review of Graphical Analysis of Data

Learn about the different ways to express data graphically and the various shapes or properties these representations have.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Types of Data Displays

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Graphical Data Analysis

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: REVIEW OF NUMERICAL ANALYSIS OF DATA

Study: Review of Numerical Analysis of Data

Learn about the numerical analysis of data as it relates to means, medians, modes, IQR, outliers, test quartiles, box plots, variance, and standard deviation.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Measures of Central Tendency

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Quartiles and Box Plots

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Measures of Spread

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 3: DATA GATHERING AND INFERENTIAL STATISTICS

Study: Data Gathering and Inferential Statistics

Investigate techniques for gathering data and explore how probability is used in statistical inference.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Data Gathering and Inferential Statistics

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 4: RANDOM VARIABLES

Study: Random Variables

Explore random variable concepts such as discrete continuous variables, histograms, density curves, mean, standard deviation of discrete random variables, normal curve, and *z*-score percentiles.

Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Random Variables
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Normal Curves
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

Journal: Cell Phone Battery Life
Evaluate the design and results of an experiment with a peer.
Duration: 0 hrs 30 mins Scoring: 20 points

LESSON 5: EXPERIMENTAL DESIGN

Study: Experimental Design
Learn how to design and carry out an experiment employing the basic principles of experimental design.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Sampling and Simulation
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

Quiz: Experimental Design
Take a quiz to check your understanding of what you have learned.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 6: EVALUATING PUBLISHED REPORTS

Study: Evaluating Published Reports
Learn how to evaluate the design of a study, the appropriateness of its analysis, and the validity of its conclusions.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Evaluating Published Reports
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 7: APPLICATIONS OF STATISTICAL TECHNIQUES

Study: Applications of Statistical Techniques
Learn how statistical techniques are used to analyze real-world observational studies and experimental designs.
Duration: 0 hrs 35 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Applications of Statistical Techniques
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Modeling: Statistical Truth or Fiction?
Evaluate gathered data and make a prediction using statistical techniques.

Duration: 0 hrs 30 mins Scoring: 20 points

LESSON 8: STATISTICAL ANALYSIS WRAP-UP

Checkup: Practice Problems
Submit your work for a set of 20 practice problems.
Duration: 0 hrs 25 mins

Review: Statistical Analysis
Get ready for the unit test by reviewing important ideas and skills.
Duration: 0 hrs 20 mins Scoring: 0 points

Test (CS): Statistical Analysis
Take a computer-scored test to check what you have learned in this unit.
Duration: 0 hrs 40 mins Scoring: 50 points

Test (TS): Statistical Analysis
Take a teacher-scored test to check what you have learned in this unit.
Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 8: BIVARIATE DATA

LESSON 1: SCATTERPLOTS

Study: Scatterplots
Learn how to construct and interpret scatterplots.
Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Scatterplots
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: CORRELATION COEFFICIENTS

Study: Correlation Coefficients
Learn how to calculate and interpret Pearson's sample correlation coefficient.
Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Correlation Coefficients
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 3: LINEAR REGRESSION

Study: Linear Regression
Learn how to calculate a linear regression equation, interpret the slope and intercept in context, and identify influential points (compared to large residuals).
Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Linear Regression
Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 4: ASSESSING LINEAR REGRESSION

Study: Assessing Linear Regression

Learn how to interpret correlation coefficients (r-values), coefficients of determination (r^2-values), and residual plots.

Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Assessing Linear Regression

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 5: TRANSFORMING BIVARIATE DATA

Study: Transforming Bivariate Data

Learn how to transform data so that a linear regression equation can be used to model nonlinear relationships.

Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Transforming Bivariate Data

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Discuss: Transforming Real-World Bivariate Data

Join a three- to five-question discussion to practice methods learned in this unit.

Duration: 0 hrs 20 mins Scoring: 30 points

LESSON 6: BIVARIATE DATA WRAP-UP

Practice: Assignment

Submit your work for a set of 20 practice problems.

Duration: 0 hrs 40 mins Scoring: 100 points

Review: Bivariate Data

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Bivariate Data

Take a computer-scored test to assess what you have learned in this unit.

Duration: 0 hrs 40 mins Scoring: 50 points

Test (TS): Bivariate Data

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 9: PROBABILITY

LESSON 1: RANDOM OUTCOMES, SAMPLE SPACE, AND EVENTS

Study: Random Outcomes, Sample Space, and Events

Learn how to anticipate all possible outcomes of a chance experiment and list specific outcomes associated with defined events.

Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Random Outcomes, Sample Space, and Events

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: GENERAL PROBABILITY RULES

Study: General Probability Rules

Learn how to apply the general addition and complement rules for two events, and learn to use and read Venn diagrams when solving probability problems.

Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: General Probability Rules

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 3: CONDITIONAL PROBABILITY

Study: Conditional Probability

Learn how to identify and solve conditional probability problems using correct notation, formulas, and tables.

Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Conditional Probability

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 4: INDEPENDENCE

Study: Independence

Learn how to show if two events are independent, and solve probability problems for both independent and dependent events using the multiplication rule and tree diagrams.

Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Independence

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 5: BAYES'S THEOREM

Study: Bayes's Theorem

Learn how to identify and solve probability problems using Bayes's theorem.

Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Bayes's Theorem

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 6: SIMULATIONS

Study: Simulations

Learn how to simulate a random event using random number generators and rows of random digits and use results to estimate probabilities empirically.

Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Simulations

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Discuss: Using Simulations to Explore Real-World Concerns

Join a three- to five-question discussion to practice methods learned in this unit.

Duration: 0 hrs 20 mins Scoring: 30 points

LESSON 7: PROBABILITY WRAP-UP

Practice: Assignment

Submit your work for a set of 20 practice problems.

Duration: 0 hrs 40 mins Scoring: 100 points

Review: Probability

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Probability

Take a computer-scored test to assess what you have learned in this unit.

Duration: 0 hrs 40 mins Scoring: 50 points

Test (TS): Probability

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 10: PROBABILITY DISTRIBUTIONS

LESSON 1: DISCRETE RANDOM VARIABLES

Study: Discrete Random Variables

Learn how to identify a discrete random variable and calculate its probability distribution, mean, and standard deviation.

Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Discrete Random Variables

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 2: CONTINUOUS RANDOM VARIABLES

Study: Continuous Random Variables

Learn how to identify a continuous random variable and calculate its probability distribution.

Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Continuous Random Variables
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 3: BINOMIAL PROBABILITY DISTRIBUTIONS

Study: Binomial Probability Distributions
Learn how to calculate binomial probability distributions, including mean and standard deviation.
Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Binomial Probability Distributions
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 4: GEOMETRIC PROBABILITY DISTRIBUTIONS

Study: Geometric Probability Distributions
Learn how to identify and calculate geometric probability distributions.
Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Geometric Probability Distributions
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

LESSON 5: NORMAL DISTRIBUTIONS

Study: Normal Distributions
Learn how to identify properties of a normal distribution and then apply these properties to determine probabilities with a table or graphing calculator.
Duration: 0 hrs 40 mins Scoring: 0 points

Checkup: Practice Problems
Complete a set of practice problems to check your understanding of the lesson.
Duration: 0 hrs 25 mins Scoring: 0 points

Quiz: Normal Distributions
Take a quiz to assess your understanding of the material.
Duration: 0 hrs 20 mins Scoring: 20 points

Discuss: Checking for Normal Probability Distributions
Join a three- to five-question discussion to practice methods learned in this unit.
Duration: 0 hrs 20 mins Scoring: 30 points

LESSON 6: PROBABILITY DISTRIBUTIONS WRAP-UP

Practice: Assignment
Submit your work for a set of 20 practice problems.
Duration: 0 hrs 40 mins Scoring: 100 points

Review: Probability Distributions
Prepare for the unit test by reviewing key concepts and skills.
Duration: 0 hrs 30 mins Scoring: 0 points

Test (CS): Probability Distributions
Take a computer-scored test to assess what you have learned in this unit.

Duration: 0 hrs 40 mins Scoring: 50 points

Test (TS): Probability Distributions

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 0 hrs 30 mins Scoring: 50 points

UNIT 11: SEMESTER 2 EXAM

LESSON 1: SEMESTER 2 EXAM

Review: Semester 2 Exam

Get ready for the semester exam by reviewing important ideas and skills.

Duration: 0 hrs 20 mins Scoring: 0 points

Exam: Semester 2 Exam

Take a computer-scored exam to demonstrate your mastery of concepts and skills covered in Semester 2.

Duration: 0 hrs 50 mins Scoring: 135 points